

CLAIMS

1. An optical source driver for driving an optical source, comprising:  
a current source series connected to the optical source;

5 a DC-DC converter having a power input, a power output connected to an input of the optical source, and a control input;  
an operational amplifier having a first input connected between the optical source and the current source, a second input for receiving a first voltage, and an output connected to the control input of the DC-DC converter;

10 a switch having a power input and having a power output connected to the input of the optical source; and  
a comparator having a first input connected between the optical source and the current source, a second input for receiving a second voltage, and an output connected to a control input of the switch.

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2. The optical source driver of claim 1 wherein the current source receives a control signal to control the amount of current generated by the current source.

3. The optical source driver of claim 1 wherein a storage capacitor is connected to the output of the controllable DC power supply.

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4. The optical source driver of claim 1 wherein the first voltage is greater than a minimum voltage required to drive the current source.

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5. The optical source driver of claim 4 wherein the second voltage is greater than a minimum voltage required to drive the current source but less than the first voltage.

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6. An optical source driver for driving an optical source, comprising:  
a current source having an input connected to an output of the optical source;  
a DC-DC converter having a power input, a power output connected to an input of  
the optical source, and a control input;

5 an operational amplifier having a first input connected between the optical source  
and the current source, a second input, and an output connected to the control input of the  
DC-DC converter; and

an overhead controller having an input and an output connected to the second input of the operational amplifier.

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7. The optical source driver of claim 6 further comprising a control signal connected to the input of the overhead controller and wherein the current source has a second input connected to the control signal.

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8. The optical source driver of claim 7 wherein output of the overhead controller decreases as the control signal indicates increasing the output level of the optical source.

9. The optical source driver of claim 7 wherein output of the overhead controller increases as the control signal indicates decreasing the output level of the optical source.

10. The optical source driver of claim 7 wherein overhead controller operates to produce a constant overhead power.

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11. The optical source driver of claim 6 wherein a storage capacitor is connected to the output of the controllable DC power supply.

12. An optical source driver for driving an optical source, comprising:  
a current source series connected to the optical source;  
a primary control loop having a DC-DC converter and an operational amplifier,  
wherein the DC-DC converter has a power input, a power output connected to the input of

the optical source, and a control input, and wherein the operational amplifier has a first input connected between the optical source and the current source, a second input for receiving a first voltage, and an output connected to the control input of the DC-DC converter, for controlling the output of the DC-DC converter in response to a control signal at the second input; and

5 an override control loop having a power input, a power output connected to an input of the optical source, a switch between the power input and the power output, and a comparator having a first input connected between the optical source and the current source, having a second input, and having an output connected to a control input of the switch, for selectively connecting the power input to the power output when a signal between the 10 optical source and the current source falls below a predetermined point.

13. The optical source driver of claim 12 wherein the first voltage is greater than a minimum voltage required to drive the current source.

15 14. The optical source driver of claim 12 wherein the predetermined point is greater than where the current driver ceases to operate.

15. An optical source driver for driving an optical source, comprising:  
20 a current source series connected to an output of the optical source; and  
a primary control loop having a DC-DC converter, an overhead controller, and an operational amplifier, wherein the DC-DC converter has a power input, a power output connected to the input of the optical source, and a control input, and wherein the overhead controller has an output and an input, and wherein the operational amplifier has a first input 25 connected between the optical source and the current source, a second input connected to the overhead controller output, and an output connected to the control input of the DC-DC converter, for controlling the output of the DC-DC converter in response to a control signal at the input of the overhead controller.

30 16. The optical source driver of claim 15 further comprising a capacitor attached to the output of the DC-DC converter and the input to the optical source that stores energy to be used to drive the optical source.

17. The optical source driver of claim 15 wherein control signal indicates the output level of the optical source.

5 18. The optical source driver of claim 17 wherein output of the overhead controller decreases as the control signal indicates increasing the output level of the optical source.

10 19. The optical source driver of claim 17 wherein output of the overhead controller increases as the control signal indicates decreasing the output level of the optical source.

20. The optical source driver of claim 17 wherein overhead controller operates to produce a constant overhead power.

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